Spacecraft Systems

Chris Hersman
Mission System Engineer
240–228–7867
Chris.Hersman@jhuapl.edu

New Horizons Developments

- New Technology Identified in Step 1 proposal
  - Low-Power Digital Receiver
  - Micro Digital Solar Attitude Detector (µDSAD)
- Other New Designs
  - 64 Gbit Flash Memory Solid State Recorder
  - Thermal Design including Thermal Control/Power Management Software
- Other Challenges
  - Boeing third stage integrated on an Atlas V launch vehicle
  - Fault management
  - Long duration mission (high reliability, knowledge retention)
  - National Environmental Policy Act (NEPA)/Launch Approval Schedule

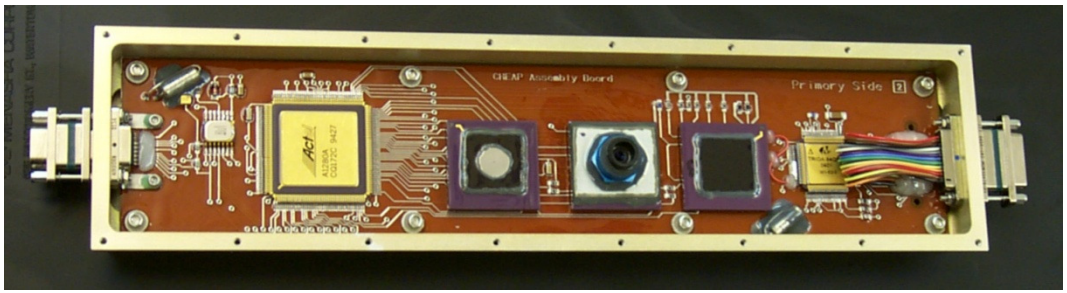
New Horizons Digital Receiver

- Identified as new technology in Step 1 proposal
- Mass: 1.0 kg (for 2 units),
- Power(@30V): 10.0W (for 2 units)
- Provided a savings of ~14W in the power budget
- Development challenge: one preferred part did not meet radiation requirements and was replaced with a more reliable, but slightly higher power part (~1W increase above original CBE for 2 units)

Digital Receiver Board

New Horizons µDSAD

- Identified as new technology in Step 1 proposal
- µDSADs Mass: 1 kg (for 6 units),
- µDSADs Power(@5V): 0.22 W (for 6 units)



µDSAD Breadboard

- Descoped in Phase B due to perceived development risk at PDR
- Replaced with Adcole Sun Sensor to mitigate this risk
- Adcole Sun Sensors Mass: 1.6 kg (1 set)
- Adcole Sun Sensors Power (@30V): 2.2W (1 set)